



TEXT MESSAGING COULD EXPLODE AS VOICE SYSTEMS GROW

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WOBURN On an average day, customers of Verizon Wireless, the biggest US cellphone company, use their handsets to send and receive more than 23 million short **text** messages.

As big as that number might sound, US message traffic has reached only a fraction of the levels in **text**-crazed areas of Europe and East Asia, where 2 billion **text** messages a month are the norm for some countries, such as the United Kingdom. But in many ways, it's perplexing that anyone would use wireless **text messaging**. After all, typing 55566688833 to spell the word love would strike a lot of people as less than practical. Even with software that can reduce the number of keystrokes required to spell a word on a cellphone, there's no escaping the fact that the 12-character keypad developed by Bell Labs engineers in the 1960s for making phone calls remains much less convenient for spelling words than a regular keyboard.

By the end of this year, however, a start-up company called Voice Signal Technologies Inc. expects to be selling speech-recognition software for cellphones that would let people compose and transmit short messages (to a maximum of 160 characters) just by dictating them aloud and saying "send."

Voice Signal, whose technology already powers dial-by-name features in several Samsung handsets, says it can support speech-to-**text** conversion of up to 30,000 words through a program that would take just 1 megabyte of memory in the 16- or 32-megabyte chip that provides the brains inside many cellphones.

Once sending a message like "What's up? Want to meet at Mary Anne's for a beer at 7?" becomes as simple as simply saying the words, it's easy to imagine that **text messaging** could explode.

The implications could be even more enormous for markets such as China, where "writing" a single Chinese character can require entering five to 10 digits. Mandarin and Cantonese are two of the 14 languages for which Voice Signal has developed speech-to-**text** systems.

The impact that effective speech recognition would have on **text messaging**, however, is only the tip of the iceberg.

If it proved to be reliable, the technology could replace the need for keypads and screens on phones, because users could say a phone number instead of dialing it.

The "user interface" aspects of a handset particularly full-color display screens generally cost far more than the phone's innards, things like microprocessors and digital radio chip sets.

Once you can make a phone that doesn't need a keypad or screen, you can dream of everything from cellphones embedded in jewelry and pens to super-cheap screenless units that could make wireless communications affordable for billions of poor residents of the Third World.

"With full voice recognition, you could make phones very, very cheaply," said Richard J. Geruson, a former senior vice president with the Finnish cellphone giant Nokia who became Voice Signal's chief executive last year.

By the end of this year, Voice Signal expects Samsung and other handset makers, including Motorola, Panasonic, and a contract manufacturer for Audiovox, to produce 20 million units with its speech-recognition technology built in. Currently, the main application lets people place calls without dialing, typically by holding down the star key to get to the speech prompt, then saying something like "Call Ellen at the office" or "Call Ellen on her mobile phone."

Coming soon are systems that will let people navigate through often-bewildering menus for downloading games or ring tones or pulling up weather forecasts. Also, as an intermediate step, Voice Signal has developed a "phrase recognition" system that would let people compose reasonably nuanced **text** messages by stitching together a series of canned phrases:

"Hi, it's me." "I got the information you sent." "Thanks for sending it to me." "I'm out of the office now." "You can reach me on my

cellphone." "Talk to you soon."

To go to the full open-ended speech dictation system, new users would have to "enroll" by speaking a string of 120 words that appear in succession on the phone screen, so the system recognizes the speech patterns of the person using the phone. The process, which starts with "Because, papers, teaching, community, especially" and continues through all the pronouns and prepositions and other words, takes about three minutes.

We trained a prototype Samsung phone with the Voice Signal system last week, and found it imperfect, but surprisingly accurate. You have to speak slowly and deliberately, but it was able to accurately render even weird messages such as "I am eating the dog food, and it tastes pretty good."

David M. Linsalata, a wireless handset market analyst with International Data Corp. in Framingham, said "a solution like this one from Voice Signal is definitely going to be beneficial, but dictating a **text** message aloud may not fit with the way people now use texting in the US. For a lot of people, it's something you want to do in a clandestine way," he said, perhaps while stuck in a boring meeting or class or riding a train. "It's not going to replace the keypad, but there could be people who find it a much easier user interface."

Arriving at the cusp of being able to have phones that you not only talk on but talk to has taken nine years of effort by a phalanx of Voice Signal's PhDs. Rather than some silver-bullet breakthrough, "It's a thousand little things that got us here," said cofounder and president Dan Roth.

"Speech technology has been disappointing people for 20 years," he said. "But the biggest challenge for us right now is educating people, letting people know that these capabilities are available. We're nowhere near the end of the road in terms of what we can do."

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